

12th July 2005.

The Royal Society of Edinburgh,
22-26 George Street,
Edinburgh.
EH2 2PQ.

Dear Professor Irvine,

RSE Inquiry into Energy Issues for Scotland

I refer to your letter of 13th May 2005, addressed to our Chairman, Professor Harper, when you kindly invited us to respond to your Inquiry. I have pleasure in submitting the following comments about our Company, how we see the energy sector in Scotland and the opportunities for coal to be a platform for diversifying in an organic manner into renewable energy.

This is then followed by our responses to the specific Stakeholder Questions.

(A) General Comments

The Scottish Coal Company Limited (Scottish Coal) is a major producer of indigenous raw materials from which the country's vital energy requirements are met. The Company's activities utilise the inherent wealth and security of Scotland's own natural resources.

As a result, Scottish Coal understands and has great expertise in the energy industry and considers itself well placed to comment on future requirements and methodologies.

As a major producer of coal for the power generation market within the UK, Scottish Coal wishes to continue to produce coal, reduce the potential effect of associated emissions, whilst at the same time diversifying into more renewable sources of energy.

Indigenous Coal

Scottish Coal considers that indigenous coal can and does compete economically with imported coal. There is a common misconception that imported coal comes into the country because it is cheaper. This is not the case for the following reasons:-

- At present, the UK coal industry only has a productive capacity of circa 23 m.tonnes, partly as a result of highly restrictive planning policies which have decimated the opencast industry in England and Wales, and which are now being proposed for Scotland through Scottish Planning Policy Note 16.
- The need to import very low sulphur coals for blending at the power station. This would be eased if more FGD were installed, e.g. at Longannet.

In addition, it must be noted that there are considerable environmental disbenefits, not only in terms of production in under-regulated countries, but also in terms of transport. Imported coal requires to be shipped for up to 28 days in vessels which are allowed to use very high sulphur fuel oils (7% sulphur compared with 0.15 sulphur in UK road diesel) which adds to both the financial and environmental costs.

The Strategy

As the largest producer of opencast mined coal in the UK, Scottish Coal has commercial links with all the main electricity generating companies. There is an increasing move towards the co-firing of biomass with coal as a means of reducing emissions in the short term and assisting the achievement of Government targets as well as developing a biomass supply chain with a sensible economy of scale. Scottish Coal has undertaken commercial scale trials and has entered into contracts to supply

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biomass to numerous generators until the question of offsite blending with Ofgem (see below) has been resolved to allow the coal and biomass to be blended at source and transported more efficiently.

Co-firing not only provides an immediate short term benefit to emissions and targets but catalyses investment in the construction of new dedicated biomass power stations (as being developed by our associated Company - Scottish BioPower Limited, whose first biomass power station is planned for the Tullis Russell Paper Mill in Glenrothes). It also provides the incentive for the growth of the energy and forestry crops necessary to meet the growing demand, facilitating further diversification in the rural economies.

In summary:

- Scottish Coal is diversifying to establish a range of other energy related industries. This builds on existing energy, materials handling and logistical skills and ensures that current levels of rural employment are maintained and significantly expanded.
- This diversification also includes wind power, hydro, and geothermal technologies but primarily focuses on biomass.
- Biomass closely accords with the Company's existing coal handling skills and infrastructure. It can be immediately blended with coal to produce a "green coal", it produces immediate emission reductions, it utilises existing investment in established power stations, and it can be blended with coal at source to be transported by rail rather than road.
- Co-firing maintains existing outputs of electricity in a safe and reliable way until the new biomass-only power stations are built and commissioned.
- Scottish Coal's strategy of gently introducing biomass to existing bulk coal deliveries and then steadily increasing the percentage until it is appropriate to transfer wholly to 100% biomass, is the lowest risk option but still with immediate emissions reductions and rural job opportunities.
- It may not at first sight seem the most exciting option, but entrusting the Nation's electricity needs to new technologies is fraught with risk. Scottish Coal's strategy is the safe and proven option.

Implementing the Strategy and Sourcing the Biomass

Scottish Coal has therefore established a new division within the same Group to produce and provide biomass fuels to both:-

1. The co-firing market being developed within the large existing coal fired power stations that will remain vitally responsible for meeting the short and medium term electricity needs of the Country. This will utilise Scottish Coal's infrastructure, expertise in large scale bulk transport systems and fuel preparation to a high standard for this demanding market.
2. The proposed large scale purpose designed CHP and biomass power stations.

This division shares the organisational and logistic skills gained through Scottish Coal's preparation and transport experience of bulk transport materials that will establish an effective and economic fuel supply chain within Scotland.

The provision of wood fuel for the co-firing market and new biomass CHP and power plants will require both forest and energy crop development within close proximity to either the end user or efficient transport hubs such as those established by Scottish Coal, in particular, rail.

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Scottish Coal has therefore invested in the establishment of SRC nursery sites in Scotland and is actively recruiting farmers and landowners into the production of SRC. Large areas of former mined land is now being utilised for the establishment of new energy crops.

Need for Governmental Support

However, notwithstanding this, the future shape of the energy industry, and Scottish Coal's involvement in it, is highly dependent on the support which is given by the Scottish and UK Governments,

There are a number of issues which need to be resolved if biomass is to be a significant contributor to the Government's targets. These include:-

- Ensuring that ROC's are administered and issued in a manner which best promotes the long term establishment of a viable and commercial biomass growth and generation business. As the industry is relatively young, it is recognised that regulations must develop in a flexible manner as the industry matures and the respective Governments are currently undertaking a formal review.
- SEPA's definitions of waste, as applied to the timber industry, can bring huge quantities of timber off-cuts within the waste licensing regime and Waste Incineration Directive. Unlike other European countries that are governed by the same Directives, this has the potential to severely restrict the development of the biomass energy industry.
- Ofgem believe it is not appropriate for them to issue co-firing ROC's for biomass unless it is blended into the coal **on site** i.e. at the power station only. We consider, that with a fully auditable trail, this concern is capable of being overcome.
- A major issue relates to the lack of an Energy Crop Scheme in Scotland. Energy crops planted in England attract a considerably higher grant than the standard £600/ha that is available in Scotland. Again, this is under review although it remains a considerable disincentive until resolved.
- We would also advocate the setting up of a working party to identify other emerging fuels, such as those being produced from the waste stream, for example, timber chips from demolition waste or waste derived fuels from municipal waste. Flexibility in the implementation of regulation is essential to ensure that a market will exist for these waste derived fuels. This must ensure that appropriate standards are pre agreed and technologies put in place to deliver.

Three general conclusions:

1. It is now amply demonstrated that there are Companies who are embracing the Government's wishes and are prepared to invest in helping to meet the future energy targets.
2. Biomass, combined with coal, provides an immediate reduction in emissions whilst securely maintaining bulk supplies of electricity from existing power stations. The new biomass-only burning stations will be greatly supported by the development of the supply chain, assisted by increased growers' confidence from co-firing markets.
3. The potential to grow additional biomass in Scotland will produce a huge jobs boost. All studies conclude that biomass is a major job creator and also sustains the economics of the agriculture and silviculture sectors.

(B) Specific Stakeholder Questions

1. The main objective must be to achieve balance. Scotland must utilise all its own natural resources (coal, wind, wave, biomass) and ensure that the benefits go into Scotland's economy and not those of Iran, Russia or Colombia. Technologies to deal with carbon abatement are almost ready to be used and could make a significant difference in the UK in 5 years, in Europe in 10 years, although it may take 30 years for China. However, if we prove the technology, it will roll out to the developing world. Scotland should support and implement the new technologies and review at the end of each period. Prioritising what is achievable in the short term is the sensible approach – e.g. co-firing biomass with coal now will give an immediate reduction in emissions whilst also helping develop new biomass-only power generation. This would combine with a carbon abatement strategy. Scotland could lead the world with this approach and sell the same technology to the other developing countries that are discovering the economic benefits of coal (e.g. China and India).

2. It is suggested that Scotland should be as self sufficient as possible in order to maximise the benefits of its own natural resources. The trend towards service industries and a reduction in manufacturing has caused a public belief that primary industries are of little value providing that there is always food on the supermarket shelf and electricity when the light is switched on. The difference is that tomatoes may come from one of 50 different countries whereas most of our gas is going to come from one of two relatively unstable countries.

A country's inherent wealth and ability to fund social and community benefits is directly related to how it manages its natural resources and primary industries. Where natural resources exist they should be exploited wherever acceptable to do so, and therefore increase security of supply and limit price exposure. (Current and likely increases in energy costs will become a public issue in the near future). Inter**dependence** within Europe is not a good objective although an inter-**relationship**, to provide an element of insurance to our own energy production, is certainly a worthwhile objective.

3. We believe this is a very simple issue – it is a very high risk strategy. We all know how volatile the oil industry is and is destined to worsen as emerging countries increase demand. However oil is predominantly shipped by sea from a large number of countries. Despite this there are international "arrangements" and commercial agreements that limit free market competition and therefore affect availability and price. However the effects of these arrangements are considerably less than the effect of only being able to purchase gas from two semi-unstable countries that is then transported by highly vulnerable pipelines across other stable and unstable countries. The increase in gas prices over the last year, and those which will be implemented over the forthcoming winter, are real proof of the dangers of relying on imported oil and, to an even greater extent, gas.

Also, the effect of electricity shortages in France and Italy in 2003 should be noted, with people dying because of the heat with nuclear power stations being cooled by fire brigade hoses. Cross border electricity trading arrangements were unilaterally suspended as exporting countries such as France tried to meet National demand. This is another portent of problems to come with Italy already predicting similar shortages for 2005.

4. It is suggested that coal meets all the stated criteria. The attractiveness of coal would also be further enhanced by technological support for carbon capture which is the one significant issue which should be addressed if coal is to be a safe, secure, long term source of energy in the developed world, rather than just the developing world.

5. The only gas supplies will be imported and, as stated above, it is suggested that it is a high risk strategy to allow so much of our short and medium term energy needs to be so reliant on imported gas. Coal is available in Scotland and the UK. Even with the unfair and unreasonable political backlash against coal following the miners' strikes, the UK still

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produces approximately 50% of the coal that it burns for electricity production. If a less negative political approach were adopted towards coal, then some limited increased production would result and, we would be less at risk to the dangers of imported gas, intermittent renewables and the environmental concerns of nuclear.

Coal should still be important and reliable in 20 and 45 years, as its total usage will reduce as renewables become more reliable and cost effective. This means that the finite extent of the resource will be extended as total use declines.

Fundamentally, we need bulk supplies of electricity to meet our needs – 24 hours/day and 7 days/week. To do this, there needs to be a recognition that for the foreseeable future we need either Nuclear (concerns on environmental danger); Gas (concerns on security and cost) or Coal (concerns on CO₂). All are sources of bulk reliable electricity although only coal has a “concern” that can be resolved in the short-medium term.

6. Renewable energy targets will only be met at a cost – in terms of financial support (ROC's), total environmental cost (of hardware production, energy consumption, ecology/landscape) and, infrastructure (new grid connection, access roads etc). Short term subsidisation of renewable energy production may be acceptable to pump prime the system but for long term sustainability, the projects must be individually bankable.

It is important to be able to demonstrate this and one of the major costs to overcome is the infrastructure. As an example, in Scotland, there is now a long queue of renewable projects awaiting access to an inadequate grid system and where increasing charges are being levied. This is going to militate against the financial bankability and ultimate success of achieving society's objectives. This should perhaps be the area where the Government provides support?

Railtrack was an example where a co-ordinated approach to infrastructure was essential if the overall objective/Government target was to be achieved. This did not happen and the Government had to re-assume control of the network (Grid) development.

7. We are not in a position to comment in detail, other than reiterate the views expressed in 6 above.
8. The immediate impact of imported gas has been to see prices rise with more significant increases anticipated. The need to financially support renewables and the need for significant investment in new infrastructure to service a large number of remote sites will also mean significant price rises. This will increase costs to industrial and domestic consumers. Scotland's economy is already fragile with a growing “reputation” for not being supportive of industry. Energy price rises will make the Country even less competitive, although Scotland, with its relative wealth of natural resources, is in a position to utilise its own energy and reduce costs to industry and become an attractive place to locate wealth and employment creating projects.

As an example, coal fired generation is relatively cheap, the production units are large, they are already “paid for”, they are already connected to the Grid and, they are located close to where consumption occurs thereby reducing the transmission losses from remote locations. As a result, there is a strong argument to ensure that coal fired generation is maintained, not just for security of supply but as a balance against the high costs of new technologies and/or production units.

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9. The greatest opportunity for Scotland probably lies with District Heating, even on a relatively small scale. Planning policy via Development Plans is the key to seeing this being implemented in new developments. Even small rural communities could benefit from District biomass schemes with timber sourced from forests very close to point of consumption. There could be a very high degree of community involvement and the resulting energy would be very secure and highly sustainable.
10. Transport is not an area for us to comment upon in detail. However, it should be recognised that a good rail network, which recognises the value of freight and not just high profile passenger traffic, is a highly efficient and relatively sustainable element in the transporting of bulk energy minerals (coal and biomass) from point of production to point of consumption. There are real constraints to freight movement by rail in Scotland which must be addressed if the environmental benefits are to be realised, including the movement of energy producing raw materials.

We believe it must be recognised that it will be some considerable time before other fuel sources will offer any real substitution for fossil fuel use in transport. We believe that electricity generation should be prioritised and the associated research and development will offer new opportunities for transport.

We are also uncertain if this question only relates to transport or to energy production in general? If it is a wider based question then there are very high risks to shutting off fossil fuel power generation before a suitable and economic bulk alternative is available and proven. The costs are immense and must be bankable. For instance a renewable energy source such as biomass costs approximately £2 million/MW so to replace Longannet Power Station at 2400MW would cost approximately £5,000,000,000!!

11. In the rush to renewables, many are convincing themselves of only the clear environmental gains to be made by halting operation of existing coal fired power stations and building new renewable ones. To be wholly comparative, renewable energy costs should reflect the total environmental cost of renewables and include not just the effect on the ecology and amenity of the area. By way of examples, there is a significant environmental cost of manufacturing turbines; the cost of transport; the effect of using concrete for construction; the use of aggregates and cement in accessing remote locations; the copper and steel which must be used to connect new (as opposed to existing) power stations to the Grid; the cost of pipelines for imported gas; the use of very high sulphur fuel oils in shipping imported oil and coal; etc. All of these concerns add weight to utilising Scotland's own natural resources for its own use and in so doing, the total environmental cost of using Scottish coal could be considerably less than certain other alternatives.
12. No. CO₂ production from *centralised* electricity production is being presented in a very bleak manner although there is no public buy-in yet to the effect of CO₂ production from say, using their private cars. This is similar to the public perception of landfilling – not very interested as does not impact on them directly.

Therefore the steps to be taken should include an open and honest provision of information to the public and politicians about the real increase in energy costs relative to the alternatives. This should be equally honest and open in relation to the total environmental cost of each so that a proper comparison about the benefits and disbenefits of each can be made. In terms of fossil fuel use, we believe the public should be informed that whilst CO₂ results from fossil fuel use, there are technologies in development that can capture and manage the effects. This may well be the most viable alternative.

13. In Scotland, energy production from coal, oil, gas and nuclear is a huge employer, in predominantly rural, deprived areas. The resulting energy is available to underwrite commercial and social developments in Scotland. Any change to this balance is likely to have

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a significant effect on employment and communities and must be very carefully considered and planned.

Conversely, careful planning will create a huge number of new “green jobs” and is equally capable to targeting the benefits into the rural community. The most important element is managing the transition.

We must not be so impatient to embrace renewable electricity that we turn off the established sources before the new sources are totally proven, and available in an economic form.

(C) Conclusions

We believe that there are two clear strands to the argument:-

1. The need for a balanced energy approach

This was best summarised by the House of Commons Scottish Affairs Committee in its report “Meeting Scotland’s Future Energy Needs”. In particular, we believe the following recommendations of that Committee are highly relevant.

- As a matter of urgency before any final, irreversible, decisions on what sorts of power generation are the most appropriate for Scotland are taken, we recommend that the Government undertake an audit of the energy resources that are currently available.
- Given the timescale and uncertainty of “emerging technologies” the Committee consider that it is unwise to assume that they can meet a quarter of the renewable proportion of Scotland’s energy needs.
- Given the vast reserves of coal within the United Kingdom, it must have a part to play in meeting our future energy needs; therefore, coal burning power stations in the UK must be fitted with the equipment necessary to capture carbon dioxide and sulphur.
- The energy audit recommended by the Committee must be on the basis that all current forms of energy, whether renewable, fossil fuel or nuclear, will be necessary.

2. Specific issues to address

- Grants for planting biomass in Scotland should be on a par with those available in England and Wales.
- Current regulatory constraints, which apparently limit the issue of ROC’s by Ofgem for the blending of biomass into coal, must be overcome.
- Whilst subsidisation of renewable energy is not supported as a generality, we believe that, as recommended by the Forum for Renewable Energy Development in Scotland, some targeting of Government financial support to catalyse diversification into emerging technologies should be available.

I hope that the above comments prove to be of interest to the Royal Society and we look forward to participating further in the process. If in the meantime there are queries, please contact me and I will endeavour to provide clarification, either directly or from one of my colleagues.

Yours sincerely,

**Alex Traynor,
Company Secretary**